



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,577	09/25/2003	Colin Frank	CE10471R	7449
22917	7590	08/26/2004	EXAMINER	
MOTOROLA, INC. 1303 EAST ALGONQUIN ROAD IL01/3RD SCHAUMBURG, IL 60196			BEHULU, ALEMAYEHU	
			ART UNIT	PAPER NUMBER
			2682	

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/670,577

Applicant(s)

FRANK, COLIN

Examiner

Alemayehu Behulu

Art Unit

2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-18 and 20-24 is/are rejected.
- 7) ☒ Claim(s) 4,19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Dam (U.S. Patent No. 6,771,987).

Regarding claim 1, Dam discloses in a communication system comprising a plurality of mobile stations and a switched beam antenna system (figure 1, 4), wherein the switched beam antenna system comprises an infrastructure and a plurality of beams for conveying user information from the infrastructure to the plurality of mobile stations (figure 1, 4, label A, B, C, D, column 1, lines 54-67, column 3, lines 32-43), a method for conveying user information to each mobile station of the plurality of mobile stations, the method comprising a step of scheduling a different mobile station of the plurality of mobile stations for substantially simultaneous use of each beam of the plurality of beams (column 3, lines 1-32 and lines 49-53, column 4, lines 60-67, claims 1, 8).

Art Unit: 2682

Regarding claim 2, Dam discloses the method of claim 1, wherein a first mobile station of the plurality of mobile stations is included in a first beam of the plurality of beams (figure 1, label A), wherein a second mobile station of the plurality of mobile stations is included in a second beam of the plurality of beams (figure 1, label B), wherein the communication system further comprises a shared communication channel, and wherein the method further comprises steps of: assigning a first portion of the shared communication channel to the first mobile station (figure 4, label A); assigning a second portion of the shared communication channel to the second mobile station (figure 4, label B); transmitting the first portion of the shared communication channel in the first beam (figure 4, label A, B); and transmitting the second portion of the shared communication channel in the second beam (figure 4, label C, D).

2. Claims 13, 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Keskitalo (U.S. Patent No. 5,893,033).

Regarding claim 13, Keskitalo discloses in a communication system comprising a switched beam antenna system that generates a plurality of predetermined, fixed beams (column 5, lines 22-30, figure 4), a base station subsystem (column 4, lines 57-column 5, lines 8, figures 1, 2, 6, 7) comprising: an antenna array comprising a plurality of array elements (column 7, lines 47-63, figure 4); a plurality of weighters (figure 4, numbers 412, 414, 416), wherein each weighter of the plurality of weighters is coupled to an element of the plurality of elements (figure 4, number 400, 402, 404, column 8, lines 12-18); and a processor coupled to each weighter of the plurality of weighters (figure 4, number 418), wherein the processor conveys a first set of weighting

Art Unit: 2682

coefficients to the weighters for a conveyance of information to a first mobile station of a plurality of mobile stations and further conveys a second set of weighting coefficients to the weighters for a conveyance of information to a second mobile station of the plurality of mobile stations (column 7, lines 61-column 8, lines 42), wherein the first set of weighting coefficients are utilized by the weighters to transmit a first beam of the plurality of beams to the first mobile station and wherein the second set of weighting coefficients are utilized by the weighters to transmit a second beam of the plurality of beams to the second mobile station (figures 4, 6-7, column 9, lines 17-column 10, lines 7).

Regarding claim 15, Keskitalo discloses the base station subsystem of claim 13, wherein the processor comprises a spreading code generator that generates a first set of spreading codes for transmissions of information to the first mobile station in the first beam and that further generates a second set of spreading codes for transmissions of information to the second mobile station in the second beam (column 8, lines 66-column 9, lines 16, figure 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dam (U.S. Patent No. 6,771,987) in view of Gans (U.S. Patent No. 5,987,037).

Regarding claim 3, Dam discloses the method of claim 2 and first beam and the second beam (figures 1, 4) . However, Dam fails to disclose wherein the communication system further comprises a control channel and wherein the method further comprises a step of transmitting the control channel in each of the first beam and the second beam. But, Gans discloses wherein the communication system further comprises a control channel and wherein the method further comprises a step of transmitting the control channel (column 11, lines 63-column 12, lines 8, column 12, lines 34-40). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Dam (U.S. Patent No. 6,771,987) with Gans (U.S. Patent No. 5,987,037) so that communication is established between the transmitter and receiver over control channel before sending a valuable information.

4. Claims 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dam (U.S. Patent No. 6,771,987) in view of Sollenberger (U.S. Pub. No. 2002/0135516).

Regarding claim 5, 6, Dam discloses the method of claim 2, 5, respectively wherein the communication system further comprises plurality of beams (figures 1, 4) and shared communication channel (figure 4, numbers A&B, C&D). However, Dam fails to disclose transmitting plurality of voice, data and noise channels. But, Sollenberger discloses plurality of voice and data channels (paragraphs [0023]-[0025]). Regarding the claimed limitation of transmitting voice channels, data channels, and noise in particular beam, as disclosed above, Dam discloses assigning and sharing of mobile to particular beams and Sollenberger discloses

Art Unit: 2682

the use of plurality of voice and data channels between BS and MS. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Dam (U.S. Patent No. 6,771,987) with Sollenberger (U.S. Pub. No. 2002/0135516) in order to balance the network load.

5. Claims 7- 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dam (U.S. Patent No. 6,771,987) in view of Lin (U.S. Patent No. 6, 360, 107).

Regarding claim 7, Dam discloses the method of claim 1, wherein a first mobile station of the plurality of mobile stations is included in a first beam of the plurality of beams (figure 1, label A), wherein a second mobile station of the plurality of mobile stations is included in a second beam of the plurality of beams (figure 1, label B). However, Dam fails to disclose wherein the communication system further comprises a plurality of orthogonal codes, and wherein the method further comprises steps of: assigning a first set of orthogonal codes of the plurality of orthogonal codes to the first mobile station; assigning a second set of orthogonal codes of the plurality of orthogonal codes to the second mobile station; transmitting the first set of orthogonal codes in the first beam; and transmitting the second set of orthogonal codes in the second beam. But, Lin discloses wherein the communication system further comprises a plurality of orthogonal codes, and wherein the method further comprises steps of: assigning a first set of orthogonal codes of the plurality of orthogonal codes to the first mobile station; assigning a second set of orthogonal codes of the plurality of orthogonal codes to the second mobile station; transmitting the first set of orthogonal codes in the first beam; and transmitting the second set of orthogonal

Art Unit: 2682

codes in the second beam (figures 1, 5, 6, 8, column 7, lines 16-52, column 12, lines 22-43).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Dam (U.S. Patent No. 6,771,987) with Lin (U.S. Patent No. 6,360,107) in order to balance the network load, as suggested by Lin.

Regarding claim 8, the combination of Dam and Lin discloses the method of claim 7, the communication system has a shared communication channel that comprises the plurality of orthogonal codes (see Lin figures 5, 8, column 7, lines 16-27).

Regarding claim 9, the combination of Dam and Lin discloses the method of claim 8, wherein the first set of orthogonal codes comprises a different proportion of the plurality of orthogonal codes than the second set of orthogonal codes (see Lin figures 5, 8, column 7, lines 16-52).

Regarding claim 9, the combination of Dam and Lin discloses the method of claim 8, wherein the first set of orthogonal codes comprises a different proportion of the plurality of orthogonal codes than the second set of orthogonal codes (see Lin figures 5, 8, column 7, lines 16-52).

6. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dam (U.S. Patent No. 6,771,987) in view of Evans (U.S. Patent No. 5,920,813).

Regarding claim 10, Dam discloses the method of claim 1. However, Dam fails to disclose wherein the communication system is divided into a plurality of geographic sectors, and wherein each beam of the plurality of beams is transmitted in a same sector of the plurality of sectors.

Art Unit: 2682

But, Evans discloses wherein the communication system is divided into a plurality of geographic sectors, and wherein each beam of the plurality of beams is transmitted in a same sector of the plurality of sectors (column 1, lines 43-column 2, lines 7, abstract). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Dam (U.S. Patent No. 6,771,987) with Evans (U.S. Patent No. 5,920,813) in order to control the transmitter's power level to improve the signal quality of the receiver, as suggested by Evans.

Regarding claim 11, the combination of Dam and Evans disclose the method of claim 10, further comprising a step of allocating to each beam of the plurality of beams an approximately same proportion of a total transmitted power allocated to the sector that includes the beams (see Evans figure 8, column 11, lines 4-47).

Regarding claim 12, the combination of Dam and Evans disclose the method of claim 10, further comprising a step of allocating to each beam of the plurality of beams a different proportion of a total transmitted power allocated to the sector that includes the beams than the proportion of the total transmitted power allocated to the other beams of the plurality of beams (see Evans figure 9, column 11, lines 48-column 12, lines 5).

7. Claims 14, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable by Keskitalo (U.S. Patent No. 5,893,033) in view of Dam (U.S. Patent No. 6,771,987).

Art Unit: 2682

Regarding claim 14, Keskitalo discloses the base station subsystem of claim 13. However, Keskitalo fails to disclose further comprising a scheduler that assigns the first beam to the first mobile station and assigns the second beam to the second mobile station. But, Dam discloses a scheduler that assigns the first beam to the first mobile station and assigns the second beam to the second mobile station (column 3, lines 1-32 and lines 49-53, column 4, lines 60-67, claims 1, 8). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Keskitalo (U.S. Patent No. 5,893,033) with Dam (U.S. Patent No. 6,771,987) so that the base station can transmit dedicated information towards a desired mobile so that the information will not be lost, as suggested by Dam.

Regarding claim 16, the combination of Keskitalo and Dam disclose the base station subsystem of claim 13, wherein the base station subsystem transmits at least a first portion of a shared communication channel in the first beam and at least a second portion of the shared communication channel the second beam (see Dam, figure 4, label A&B, C&D).

8. Claim 17 are rejected under 35 U.S.C. 103(a) as being unpatentable by Keskitalo (U.S. Patent No. 5,893,033) in view of Lin (U.S. Patent No. 6,360,107).

Regarding claim 17, Keskitalo discloses the method of claim 16. However, Keskitalo fails to disclose wherein the shared communication channel comprises a plurality of orthogonal codes. But, Lin discloses wherein the shared communication channel comprises a plurality of orthogonal codes (figures 1, 5, 6, 8, column 7, lines 16-52, column 12, lines 22-43). Therefore, at

Art Unit: 2682

the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Keskitalo (U.S. Patent No. 5,893,033) with Lin (U.S. Patent No. 6, 360, 107) in order to balance the network load, as suggested by Lin.

9. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keskitalo (U.S. Patent No. 5,893,033) in view of Gans (U.S. Patent No. 5,987,037)

Regarding claim 18, Keskitalo discloses the base station subsystem of claim 16 and first beam and the second beam (figures 1, 4). However, Keskitalo fails to the base station subsystem further transmits a control channel. But, Gans discloses the base station subsystem further transmits a control channel (column 11, lines 63-column 12, lines 8, column 12, lines 34-40).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Keskitalo (U.S. Patent No. 5,893,033) with Gans (U.S. Patent No. 5,987,037) so that communication is established between the transmitter and receiver over control channel before sending a valuable information.

10. Claims 20, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keskitalo (U.S. Patent No. 5,893,033) in view of Sollenberger (U.S. Pub. No. 2002/0135516).

Regarding claims 20, 21, Keskitalo discloses The base station subsystem of claims 16, 21 respectively, wherein the base station subsystem further transmits plurality beams (column 9, lines 17-30, figures 4, 5). However, Keskitalo fails to disclose assigning plurality of voice channel and plurality of data channels. But, Sollenberger discloses assigning plurality of voice

Art Unit: 2682

channel and plurality of data channels. But, Sollenberger discloses plurality of voice and data channels (paragraphs [0023]-[0025]. Regarding the claimed limitation of transmitting voice channels, data channels, and noise in particular beam, as disclosed above, Dam discloses assigning and sharing of mobile to particular beams and Sollenberger discloses the use of plurality of voice and data channels between BS and MS. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Keskitalo (U.S. Patent No. 5,893,033) with Sollenberger (U.S. Pub. No. 2002/0135516) in order to balance the network load.

11. Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keskitalo (U.S. Patent No. 5,893,033) in view of Evans (U.S. Patent No. 5,920,813).

Regarding claim 22, the base station subsystem of claim 13. However, Keskitalo fails to disclose wherein the station subsystem operates in a communication system that is divided into a plurality of geographic sectors and wherein each beam of the plurality of beams is transmitted in a same sector of the plurality of sectors. But, Evans discloses wherein the station subsystem operates in a communication system that is divided into a plurality of geographic sectors and wherein each beam of the plurality of beams is transmitted in a same sector of the plurality of sectors (column 1, lines 43-column 2, lines 7, abstract). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Keskitalo (U.S. Patent No. 5,893,033) with Evans (U.S. Patent No. 5,920,813) in order to control the transmitter's power level to improve the signal quality of the receiver, as suggested by Evans.

Art Unit: 2682

Regarding claim 23, the combination of Keskitalo and Evans disclose the base station subsystem of claim 22, wherein the base station subsystem allocates a total transmitted power to the sector that includes the beams and wherein the base station subsystem further allocates to each beam of the plurality of beams an approximately same proportion of a total transmitted power allocated to the sector that includes the beams (see Evans figure 8, column 11, lines 4-47).

Regarding claim 24, the combination of Keskitalo and Evans disclose the base station subsystem of claim 22, wherein the base station subsystem allocates a total transmitted power to the sector that includes the beams and wherein the base station subsystem further allocates to each beam of the plurality of beams a different proportion of a total transmitted power allocated to the sector that includes the beams than the proportion of the total transmitted power allocated to the other beams of the plurality of beams (see Evans figure 9, column 11, lines 48-column 12, lines 5).

Allowable Subject Matter

12. Claims 4 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 4, 19, the applied references fail to disclose, or render obvious the claimed limitations that the control channel comprises a first control channel, wherein the communication system further comprises a second control channel that is associated with the first mobile station and not with the second mobile station, and wherein the method further comprises a step of

Art Unit: 2682

transmitting the second control channel in the first beam but not in the second beam as specified in the claim.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Molnar et al. (U.S. Patent No. 6,768,913) Method and Apparatus for Performing Beam Searching in a Radio Communication System

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alemayehu Behulu whose telephone number is 703-305-4828. The examiner can normally be reached on 8 AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB


VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600
8/23/04